



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

11.17

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/798,477	03/11/2004	Kee-Yean Ng	70030733-1	7408

57299 7590 09/11/2006
AVAGO TECHNOLOGIES, LTD.
P.O. BOX 1920
DENVER, CO 80201-1920

EXAMINER

QUARTERMAN, KEVIN J

ART UNIT PAPER NUMBER

2879

DATE MAILED: 09/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/798,477

Applicant(s)

NG ET AL.

Examiner

Kevin Quarterman

Art Unit

2879

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 June 2006.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-20 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 11 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's amendment and remarks received on 21 June 2006 have been entered.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 14-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicant has amended independent claim 14 to recite a "single" fluorescent material overly is provided at a top end of the plurality of cavities. The original disclosure of the instant application does not describe this new limitation in such a way as to reasonably convey to one skilled in the art that the inventors, at the time the application was filed, had possession of the claimed invention. Thus, this new limitation is deemed new matter. Due to their dependency upon independent claim 14, claims 15-20 are also rejected for failing to comply with the written description requirement.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Reeh (US 6,576,930).

6. Regarding independent claim 1, Figure 3 of Reeh shows a light-emitting diode display device comprising a substrate (2); a plurality of walls (8) disposed on the substrate, the plurality of walls forming a cavity (9), the cavity being filled with an encapsulant (15), the encapsulant not including fluorescent material; an LED (1) disposed on a first portion (2) of the substrate within the cavity; an electrical connection (14) between the LED and a second portion (3) of the substrate; and a fluorescent material overlay (4) at a top end of the cavity, wherein the fluorescent material overlay has a thickness capable of substantially fully converting all light emitted from the LED to fluorescent radiation (col. 3, ln. 42-50).

7. Regarding claim 2, Figure 3 of Reeh shows the fluorescent material overlay including a layer of phosphor particles (6).

8. Regarding claim 3, Figure 3 of Reeh shows the fluorescent material overlay having a substantially consistent thickness and includes a substantially uniform matrix of phosphor particles (see also col. 3, ln. 42-45).
9. Regarding claim 4, Reeh discloses the fluorescent material overlay including a combination of two or more fluorescent material types (col. 4, ln. 53-57).
10. Regarding claim 5, Reeh discloses the fluorescent material overlay including phosphor particles having a mean diameter within the range of 1 micrometer to 50 micrometer (col. 6, ln. 1-2).
11. Regarding claim 6, Reeh discloses the fluorescent material overlay including phosphor particles having a mean diameter within the range of 10nm to 100nm (col. 9, ln. 1-5).
12. Regarding claim 7, Reeh discloses the fluorescent material overlay may include an organic dye (col. 9, ln. 24-28).
13. Regarding independent claim 8, Figure 3 of Reeh shows a light-emitting diode display device comprising a substrate (2); a plurality of walls (8) disposed on the substrate, the plurality of walls forming a cavity (9); an LED (1) disposed on a first portion (2) of the substrate within the cavity; an electrical connection (14) between the LED and a second portion (3) of the substrate; and a fluorescent material overlay (4, 29) at a top end of the cavity, wherein only a portion of the fluorescent material overlay includes fluorescent material (4, 6), and wherein another portion (29) of the fluorescent material overlay does not have any fluorescent material (see also col. 12, ln. 51-67).

Art Unit: 2879

14. Regarding claim 9, Figure 3 of Reeh shows the fluorescent material overlay having a substantially consistent thickness and includes a substantially uniform matrix of phosphor particles.
15. Regarding claim 10, Reeh discloses the fluorescent material overlay including a combination of two or more fluorescent material types (col. 4, ln. 53-57).
16. Regarding claim 11, Reeh discloses the fluorescent material overlay including phosphor particles having a mean diameter within the range of 1 micrometer to 50 micrometer (col. 6, ln. 1-2).
17. Regarding claim 12, Reeh discloses the fluorescent material overlay including phosphor particles having a mean diameter within the range of 10nm to 100nm (col. 9, ln. 1-5).
18. Regarding claim 13, Reeh discloses the fluorescent material overlay may include an organic dye (col. 9, ln. 24-28).

Claim Rejections - 35 USC § 103

19. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

20. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

Art Unit: 2879

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

21. Claims 14-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Isoda (US 6,774,406) in view of Reeh (US 6,576,930).

22. Regarding independent claim 14, Figures 1 and 3 of Isoda show a light-emitting diode display device comprising a substrate (1); a plurality of cavities (1c), each of the plurality of cavities formed within a plurality of walls (1c) disposed on the substrate; a plurality of LEDs (3), each of the plurality of LEDs disposed within a separate one of the plurality of cavities, each of the plurality of LEDs disposed on a first portion of the substrate; and a plurality of electrical connections (6) connecting one of the plurality of LEDs to one or more respective second portions (1a, 1b) of the substrate.

23. Isoda teaches the limitations of independent claim 14 discussed earlier but fails to exemplify a single fluorescent material overlay at a top end of the cavities.

24. In Figure 3, Reeh teaches that it is known in the art to provide light-emitting diode display devices with a fluorescent material overlay (4) at a top end of a cavity (9) for ensuring a uniform color of radiated light (col. 3, ln. 42-43).

25. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a fluorescent material overlay, as taught by Reeh, at a top end of the cavity of Isoda for converting light emitted by the LED to fluorescent radiation.

26. Regarding claim 15, Figure 3 of Reeh shows the fluorescent material overlay including a layer of phosphor particles (6).
27. Regarding claim 16, Figure 3 of Reeh shows the fluorescent material overlay having a substantially consistent thickness and includes a substantially uniform matrix of phosphor particles.
28. Regarding claim 17, Reeh discloses the fluorescent material overlay including phosphor particles having a mean diameter within the range of 1 micrometer to 50 micrometer (col. 6, ln. 1-2).
29. Regarding claim 18, Reeh discloses the fluorescent material overlay including phosphor particles having a mean diameter within the range of 10nm to 100nm (col. 9, ln. 1-5).
30. Regarding claim 19, Reeh discloses the fluorescent material overlay may include an organic dye (col. 9, ln. 24-28).
31. Regarding claim 20, Reeh discloses the fluorescent material overlay also including a plurality of fluorescent material types (col. 4, ln. 53-62), while Figure 3 of Isoda show fluorescent material (5) included in a corresponding portion or portions of the plurality of cavities (1c).

Response to Arguments

32. Applicant's arguments received 21 June 2006 have been fully considered but they are not persuasive.
33. In response to applicant's argument that Reeh teaches a system that emits polychromatic light instead of monochromatic light, it is noted that the features upon

which applicant relies are not recited in the rejected claims. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

34. In response to applicant's argument, regarding independent claim 1, that Reeh does not disclose anything about the thickness of the conversion layer, the Examiner respectfully disagrees. The Examiner notes that Reeh discloses that the conversion layer has a constant thickness throughout, thereby ensuring a uniform color of radiated light (col. 3, ln. 42-45). The Examiner also notes that in the instant application, applicant discloses the fluorescent material overlay having substantially consistent thickness for keeping the proportion of the LED radiation that is converted to fluorescent material radiation constant (pg. 5, ln. 25-27). Thus, the Examiner holds that Reeh does indeed disclose information about the thickness of the conversion layer.

35. In response to applicant's argument, also in regards to independent claim 1, that Reeh does not teach a fluorescent material overlay having a thickness capable of substantially fully all light emitted by the LED to fluorescent radiation, the Examiner notes that applicant does not disclose any particular thickness of the fluorescent material overlay but only discloses that the thickness is substantially consistent and that the thickness may vary. Since Reeh discloses the conversion layer having a constant thickness (col. 3, ln. 42-45) as well as a conversion having a varying thickness (col. 2, ln. 6-11), the Examiner holds that Reeh teaches each of the claimed structural limitations of independent claim 1, as discussed earlier.

36. In response to applicant's argument, also in regards to independent claim 1, that Reeh does not teach the light from the LED being substantially fully converted since some light escapes unconverted, the Examiner notes that applicant's use of the term "substantially" in the claim leaves open the possibility that some light may escape unconverted. Thus, the Examiner holds that Reeh teaches the claimed invention as discussed earlier.

37. In response to applicant's argument, regarding independent claim 8, that Reeh does not teach only a portion of the fluorescent material overlay containing light-converting fluorescent material, the Examiner notes that claims are given their broadest reasonable interpretation. In the instant case, independent claim 8 recites "a florescent material overlay at a top end of the cavity, wherein only a portion of the fluorescent material overlay includes fluorescent material, and wherein another portion of the fluorescent material overlay does not have any fluorescent material." In Figure 3 of Reeh, the Examiner interprets the fluorescent material overlay to include the combination of elements 4 and 29. Since element 4 is a portion of the overlay that includes fluorescent material and element 29 in another portion that does not have any fluorescent material, the Examiner holds that Reeh teaches the limitations of the independent claim 8, as discussed earlier.

38. In response to applicant's argument, regarding independent claim 14, that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation

Art Unit: 2879

to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

39. In this case, applicant argues that there is no support in either reference for the combination. The Examiner notes that there is no requirement that an express, written motivation to combine must appear in prior art references before a finding of obviousness, and motivation may exist in the nature of the problem being solved (MPEP § 2145 X). Since Reeh discloses the fluorescent material overlay being provided for ensuring a uniform color of radiated light, as discussed earlier, the Examiner holds that proper motivation to combine the references has been provided.

Conclusion

40. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

41. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

Art Unit: 2879

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

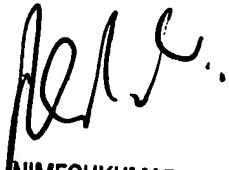
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Quarterman whose telephone number is (571) 272-2461. The examiner can normally be reached on M-TH (7-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (571) 272-2457. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kevin Quarterman
Examiner
Art Unit 2879

kq 
28 August 2006


NIMESHKUMAR D. PATEL
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800